In response, applicant has amended the specification of the instant application to identify each sequence to be included in the concurrently submitted "Sequence Listing" with a Sequence ID No.

Such amendment does not constitute new matter, and applicant respectfully requests the Office to proceed with further examination on the basis of such amendment.

Respectfully submitted,

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APPENDIX A

Version with Markings to Show Changes Made

In the Specification:

1. On page 2, the paragraph beginning at line 12 has been changed, as follows:

ELPs, as explained more fully in the Detailed Description of the Invention hereof (Section 5) are oligomeric repeats of the pentapeptide Val-Pro-Gly-X-Gly (Sequence ID No. 1), where the guest residue X is any amino acid. ELPs undergo a reversible inverse temperature transition. They are highly soluble in water below the inverse transition temperature (T_t), but undergo a sharp (2-3°C range) phase transition when the temperature is raised above their T_t, leading to desolvation and aggregation of the polypeptide.[1, 2, 3] In previous work, McPherson et al. have exploited the inverse transition to purify recombinant poly(GVGVP) polypeptides. Previous studies have also shown that protein conjugates of poly(N-isopropylacrylamide), a synthetic polymer that undergoes a similar thermally-reversible phase transition, also retain the transition behavior of the free polymer.[5, 6, 7]

2. On page 14, the paragraph beginning at line 15 has been changed, as follows:

Another preferred ELP comprises polymeric units having the sequence IPGXG (Sequence ID No. 2), where X is as defined above.

3. On page 23, the paragraph beginning at line 26 has been changed, as follows:

The objective in this example was to design a β-turn sequence with a predicted T_t above 37°C so that an FP would remain soluble under conditions used for E. coli culture, but which could be aggregated by a small increase in temperature. Previous studies by Urry and colleagues have shown that two ELP-specific variables, guest residue(s) composition[28] (i.e., identity and mole fraction of X in the VPGXG monomer) and chain length[29] of the ELP profoundly affect the transition temperature, and thereby provide design criteria to specify the T_t for a specific application. Based on these studies, a gene was synthesized encoding an ELP sequence (Sequence ID No. 3) with guest residues valine, alanine, and glycine in the ratio 5:2:3, with a predicted T_t of ~40°C in water. The synthetic gene, which encoded 10 VPGXG pentapeptide repeats (the "10-

mer"), was oligomerized up to 18 times to create a library of genes encoding ELPs with precisely-specified molecular weights (MWs) ranging from 3.9 to 70.5 kDa. To my knowledge, these are the first examples of genetically-engineered ELPs with precisely-defined chain length and amino acid sequence, which are designed to exhibit an inverse transition at a specified temperature. Thioredoxin was expressed as a N-terminal fusion with the 10-, 20-, 30-, 60-, 90-, 120-, 150-, and 180-mer ELP sequences, and tendamistat was expressed as a C-terminal fusion to thioredoxin/90-mer ELP (Figure 1b).

4. On page 32, the paragraph beginning at line 21 has been changed, as follows:

Standard molecular biology protocols were used for synthesis and oligomerization of the ELP genes (Ausubel, et al.[32]). Monomer genes for two ELP sequences were utilized in this example. The first, ELP[$V_5A_2G_3$-10] encoding ten Val-Pro-Gly-Xaa-Gly repeats where Xaa was Val, Ala, and Gly in a 5:2:3 ratio, respectively, had been synthesized previously[37]. The second monomer, ELP[V-5] (Sequence ID No. 4), encoded five Val-Pro-Gly-Val-Gly pentapeptides (i.e., Xaa was exclusively Val). The coding sequence for the ELP[V-5] monomer gene was: 5'-GTGGGTGTTCCGGGCGTAGGTGTCCCAGGTGTGGGCGTACCGGGCGTTGGTGTTCCTG GTGTCGGCGTGCCGGGC-3' (Sequence ID No. 5). The monomer genes were assembled from chemically synthesized, 5'-phosphorylated oligonucleotides (Integrated DNA Technologies, Coralville, IA), and ligated into a pUC19-based cloning vector. A detailed description of the monomer gene synthesis is presented elsewhere[38].

5. On page 33, the paragraph beginning at line 11 has been changed, as follows:

Different ELP constructs are distinguished here using the notation ELP[X_iY_j-n], where the bracketed capital letters are single letter amino acid codes and their corresponding subscripts designate the frequency of each guest residue in the repeat unit, and n describes the total length of the ELP in number of pentapeptides. The two ELP constructs central to the present example are ELP[$V_5A_2G_3$-90] (35.9 kDa) (Sequence ID No. 6) and ELP[V-20] (9.0 kDa) (Sequence ID No. 7).